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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,015	03/30/2004	Scung Wan Chac	2336-255	2799

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LOWE HAUPTMAN GILMAN & BERNER, LLP
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EXAMINER

VU, HUNG K

ART UNIT	PAPER NUMBER
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2811

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/812,015	Applicant(s) CHAE, SEUNG WAN	
	Examiner Hung Vu	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-6, 11-13, 37, 38, 40 and 41 is/are pending in the application.
- 4a) Of the above claim(s) 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-6, 11, 12, 37, 38, 40 and 41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Request for Continued Examination

1 A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 01/23/07 has been entered. An action on the RCE follows.

Claim Objections

2. Claim 12 is objected to because of the following informalities: In claim 12, line 2, "the second metal layer" should be changed to "the metal layer", for clarity. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2 – 5, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Orita et al. (PN 6,117,700, of record).

Art Unit: 2811

Orita et al. discloses, as shown in Figures 2 and 9, a GaN-based semiconductor light emitting diode comprising:

- a substrate (11) on which a GaN-based semiconductor material is grown;
- a lower clad layer (14) formed on the substrate, and made of a first conductive GaN semiconductor material (n-type);
- an active layer (15) formed on a designated portion of the lower clad layer, and made of an undoped GaN semiconductor material;
- an upper clad layer (17B) formed on the active layer, and made of a second conductive GaN semiconductor material (p-type);
- an alloy layer (21) formed on the upper clad layer, and made of a hydrogen-storing alloy [Col. 9, lines 47-50]
- a metal layer (18) formed on the alloy layer, and made of one metal selected from the group consisting of Al and Ag [Col. 10, lines 33-42].

Regarding claim 2, Orita et al. discloses the alloy layer is made of one hydrogen-storing alloy selected from the group consisting of Mn-based hydrogen-storing alloys, Ln-based hydrogen-storing alloys, Ni-based hydrogen-storing alloys and Mg-based hydrogen-storing alloys [Col. 9, lines 16-21 and Col. 10, lines 33-42].

Regarding claim 3, Orita et al. discloses the Mn-based hydrogen-storing alloy is MnNiFe or MnNi [Col. 9, lines 16-21 and Col. 10, lines 33-42].

Art Unit: 2811

Regarding claim 4, Orita et al. discloses the La-based hydrogen-storing alloy is LaNi₅ [Col. 9, lines 16-21 and Col. 10, lines 33-42].

Regarding claim 5, Orita et al. discloses the Ni-based hydrogen-storing alloy is ZnNi or MgNi [Col. 9, lines 16-21 and Col. 10, lines 33-42].

Regarding claim 12, Orita et al. discloses the metal layer has a thickness of 1000Å (which is in the range of 500Å to 10,000Å) [Col. 6, lines 51-55].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 37 and 40 – 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orita et al. (PN 6,117,700, record).

Orita et al. discloses all of the claimed limitations except material of the alloy layer. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the alloy layer of Orita et al. having the materials as that claimed by Applicant, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Art Unit: 2811

5. Claims 2 – 6, 11, 12, 37, 38 and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hata et al. (PN 6,649,942, of record) in view of Orita et al. (PN 6,117,700, record).

Hata et al. discloses, as shown in Figure 1-14, a GaN-based semiconductor light emitting diode comprising:

- a substrate (1) on which a GaN-based semiconductor material is grown;
- a lower clad layer (4) formed on the substrate, and made of a first conductive GaN semiconductor material (n-type);
- an active layer (5) formed on a designated portion of the lower clad layer, and made of an undoped GaN semiconductor material;
- an upper clad layer (7) formed on the active layer, and made of a second conductive GaN semiconductor material (p-type);
- an alloy layer (10a) formed on the upper clad layer, and made of a hydrogen-storing alloy [Col. 25, lines 46-67];
- a metal layer (10b) formed on the alloy layer.

Hata et al. discloses the metal layer is made of Au. Hata et al. does not disclose the metal layer is made of one selected from the group consisting of Al and Ag. However, Orita et al. discloses a metal layer (18) is made of one metal selected from the group consisting of Au, Al and Ag. Note Figures 2 and 9 and Col. 10, lines 33-42 of Orita et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the metal layer of Hata et al. being made of one metal selected from the group consisting of Al and Ag,

Art Unit: 2811

such as taught by Orita et al. because Au, Al and Ag are commonly used to form the metal layer and they are interchangeable.

Regarding claim 2, Hata et al. and Orita et al. disclose the alloy layer is made of one hydrogen-storing alloy selected from the group consisting of Mn-based hydrogen-storing alloys, Ln-based hydrogen-storing alloys, Ni-based hydrogen-storing alloys and Mg-based hydrogen-storing alloys [Col. 25, lines 46-67].

Regarding claims 3, 6, 37 and 40 – 41, Hata et al. and Orita et al. disclose all of the claimed limitations except material of the alloy layer. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the alloy layer of Hata et al. and Orita et al. having the materials as that claimed by Applicant, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claim 4, Hata et al. and Orita et al. disclose the La-based hydrogen-storing alloy is LaNi₅ [Col. 25, lines 46-67].

Regarding claim 5, Hata et al. and Orita et al. disclose the Ni-based hydrogen-storing alloy is ZnNi or MgNi [Col. 25, lines 46-67].

Art Unit: 2811

Regarding claim 12, although Hata et al. and Orita et al. do not teach the thickness of the metal layer, as that claimed by Applicants, however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the metal layer of Hata et al. and Orita et al. having a desired thickness, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 38, Hata et al. and Orita et al. disclose the diode further comprising:

an electrode layer (11) on an upper surface of the metal layer;

wherein the electrode layer occupies only a middle region of the upper surface of the metal layer without covering a peripheral region of the upper surface of the metal layer, the peripheral region surrounding the middle region.

Response to Arguments

6. Applicant's arguments with respect to claim 11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Monday to Thursday 6:00-4:30.

Art Unit: 2811

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard T. Elms can be reached on (571) 272 - 1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vu

April 12, 2007

A handwritten signature in black ink, appearing to read "Hung Vu", written over a horizontal line.

Hung Vu

Primary Examiner